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Maine writes a new ed-tech success story

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State's pioneering laptop program contributes to improved writing scores

By Bette Manchester

Primary Topic Channel: [One to one computing](#)

Since the early 1990s, Maine has been at the forefront of educational innovation, thanks largely to the adoption of new standards--called the Maine Learning Results--as a driver for 21st-century teaching and learning. A critical outcome and guiding principle of these standards is to graduate all students from Maine high schools to be clear and effective communicators.

To achieve the goals spelled out in the Learning Results, state leaders made a strategic decision in 2001 to ensure that all students and educators, beginning with grade seven, would be given 21st-century tools and resources to support instruction. Every seventh- grade student and teacher received a laptop computer and software; teachers also received ongoing professional development.

Equity of access to digital tools and resources has been a hallmark of the Maine Learning Technology Initiative (MLTI)--and professional development that focuses on fostering literacy skills, rather than on the technology itself, has been a key to ensuring that students develop the necessary 21st-century skills. For many years, MLTI professional development has focused on simultaneously integrating a knowledge of technology, pedagogy, and content, helping teachers deepen their classroom practices.

With the correct focus on equity of access and high-quality, sustained professional development, technology resources can transform the learning process in ways we never imagined. This process is best described by the work of Mishra & Koehler in building the Technological Pedagogical Content Knowledge (TPCK) framework:

- Writing process: Students draft, revise, peer conference, write to other adults (including and beyond the classroom teacher), provide and receive feedback to and from their peers, and collaborate on writing projects. The accessibility features of the laptop allow students to hear their own writing read aloud, and easy access to a thesaurus and dictionary provide timely assistance. The teachers and students use electronic "stickies" to give feedback, eliminating the marked-up paper.
- Writing for a specific audience and purpose: Students are able to reach a variety of audiences via blogs, wikis, and other online social-networking tools. At the same time, the internet gives them access to people working in a variety of fields (science, math, other writers) and allows them to experience and use different types of communication.
- Writing across content areas: The laptop is a natural place for collecting and organizing data, media, and writing tools, thus supporting writing across various content areas--mathematical, scientific, and expository writing.

Because each student has a personal technology device, the students are able to work on their writing any time,

anywhere; keep a portfolio of their work; and share their work more easily with family, peers, and others.

Sharon Bowman, an eighth-grade teacher from Mt. Ararat Middle School in Topsham, Maine, sums up what we have heard from teachers across the state:

"... All writing teachers will tell you that at the heart of the writing process is revision. Revision is the step in the process too often overlooked in the past, [owing] to many factors--most simply put, it's just a lot of work if it's to be accomplished on paper. Revision is the opportunity for the student to step back from the rough draft and resee, rethink, refeel their first thoughts plunked down on the paper. ...

"In the past, in the days without computers, students were forgiven for a rough draft, quick edit, and copy-over by too many teachers; hence, unthoughtful writing [resulted]. Since the introduction of laptops in writing classes, I have been provided with the one tool that makes revision accessible and real to my students. It has never been that kids refused to revise; it was just not possible on paper to make revisions easily. Students in my class learn revision techniques based on purpose and audience, which drives writing strategy. They learn this mantra early on, and through it [they] understand the reason people write. You have a message, you choose the audience, and then you choose the techniques that best fit your purpose. It sounds simple, yet students for the first time get the idea when they can so easily manipulate words. ...

"How do laptops make all this happen? During writing conferences with my students, we pursue many revision techniques. My students learn that each piece must have something to say, that each paragraph and word must carry meaning to a specific audience. As we sit together, students might understand, for example, that an entire paragraph is in the wrong place, that it will be more effective at the beginning of the piece than in the middle. One highlight, one click, and it's there. It might be that [a paragraph] is redundant or poorly worded, [so] we take it out. We work together to revise each paragraph, each sentence, each word. It is all about one essential point. Every word counts.

"Students search for words and find that they have used the same verb or too many adjectives to express a simple thought. Students can call up the thesaurus and discover a better word in each sentence. Laptops provide more thoughtful expression of a student's voice. ... When all of the manipulation of words flows as to meaning, students realize that their voices are able to shine. No longer bound by copy-overs, the creative reality, the ability to paint with words, shines through. Teachers are actually able to have the conversation with students about voice. ...

"There is so much more to this. It is just that I thought the real issue, although not glitzy, deserves my words. I love this so much, it would take a book to express all the ways I use the laptops. Just today we researched 13th-century Italy to create our sets for *Much Ado About Nothing*. Students turn the entire room (and I mean every wall) into Messina. It is so exciting to read the play within an environment that is not our classroom. They show their excitement and pure happiness in their collaboration and urgent desire to get into the room and get busy. Today we had Bob Marley playing and paint flying and Messina being recreated thought the magic of laptops and, of course, Shakespeare. God, I love what I do."

That's the voice of the teacher--what do the students have to say about this?

Will: "I like having the laptops, because I can produce more work in less time. I've improved lots on my writing skills, because it is easier to delete words and retype them than taking the time to redo the whole story to add five words. But the best thing is that I rarely lose my work."

Omri: "I like having computers for writing, because I can get work done with ease, and I don't have to write my story over, and over, and over on separate sheets of paper, with the teacher scribbling questions, or what to change, or spelling. Plus, if I get one letter wrong, I have to erase, and sometimes, it erases the work above. With computers, to change something, you just need to press delete. Computers are easier to work with, because they don't wear out your hand unless you've typed for a long time, and you can write faster. It's also easier to express myself with writing, and I

only have to print one time, and I get the feel. This is why I like computers."

Results are now visible, not only to teachers and students, but also in measurable outcomes. A study by Dr. David Silvernail and his team at the University of Southern Maine's Center for Education Policy, Applied Research, and Evaluation indicates that, five years after the initial implementation of the MLTI, students' writing scores on Maine's statewide test have improved significantly. Furthermore, students scored better the more extensively they used their laptops in developing and producing their writing. The evidence indicated that using their laptops in this fashion helped them become better writers in general, not just better writers using laptops.

Earlier this spring, Maine received its students' results from the writing portion of the National Assessment of Educational Progress (NAEP). To measure students' writing skills, the assessment engaged students in narrative, informative, and persuasive writing tasks.

Maine eighth graders' writing scores improved significantly over previous years. Thirty-nine percent of Maine eighth graders performed at or above proficiency in 2007, compared with 36 percent in 2002 and 32 percent in 1998. Nationally, 31 percent of students performed at or above proficiency in 2007. The percentage of students in Maine performing below the basic level dropped from 13 percent in 1998 to 10 percent in 2007.

Maine continues its journey to bring about equity of access to technology resources and support for educators as they learn to "flexibly navigate the space defined by the three elements of content, pedagogy, and technology and the complex interactions among these components." (Mishra & Koehler, 2008)

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